

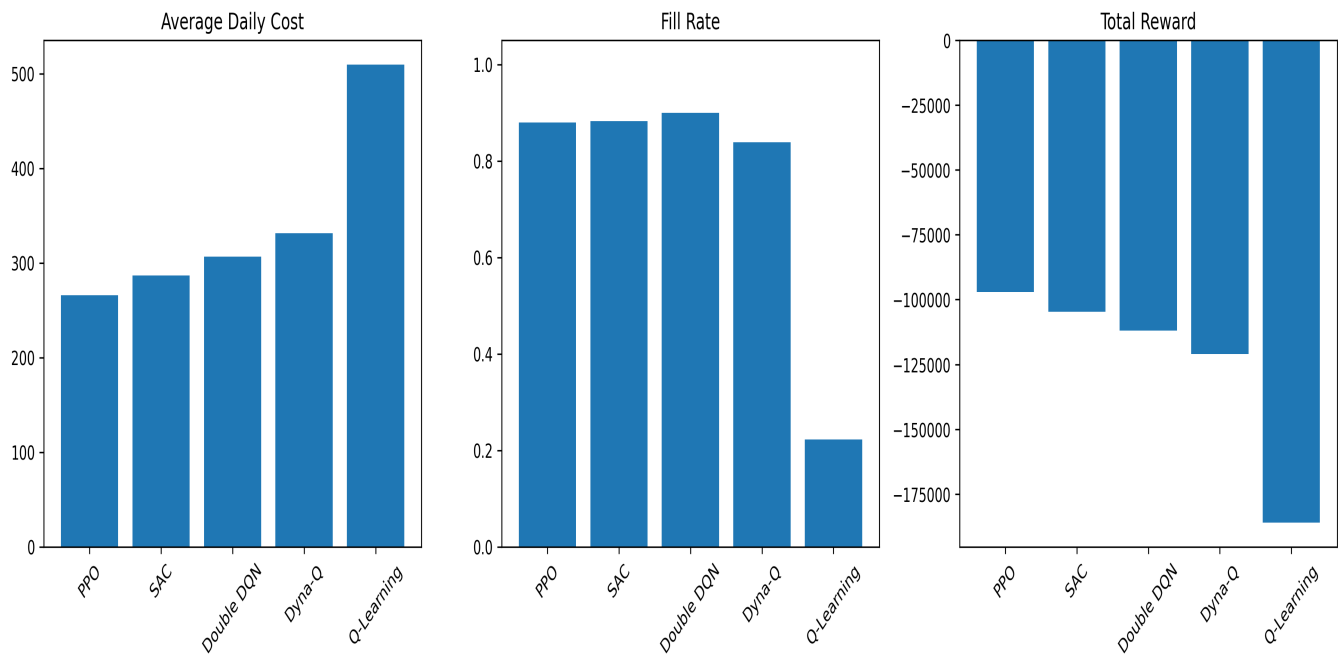
# Inventory Management RL Evaluation Report

Generated: 2025-11-30 12:13:53

## Summary Comparison

Algorithm	Avg Cost	Fill Rate	Stockout Rate	Avg Inventory	Total Reward
PPO	\$265.89	87.96%	20.49%	67.3	-97050.57
SAC	\$286.87	88.22%	22.58%	65.3	-104708.56
Double DQN	\$306.54	89.97%	15.70%	98.1	-111887.30
Dyna-Q	\$331.36	83.84%	22.19%	111.2	-120946.10
Q-Learning	\$509.69	22.25%	94.11%	1.4	-186035.20

# Performance Comparison Plots



## Detailed Evaluation Results

Found 1 saved model(s):

[1] 20251124\_234818

[N] Train new model

## Q-Learning Evaluation Report

### **COSTS**

Avg Daily Cost: \$509.69 (+/-9.87)

Holding Cost: \$504.20

Stockout Cost: \$161715.00

Ordering Cost: \$23816.00

### **SERVICE LEVEL**

Fill Rate: 22.2%

Stockout Rate: 94.1%

### **INVENTORY**

Avg Inventory: 1.4 units

### **PERFORMANCE**

Total Reward: -186035.20

Found 1 saved model(s):

[1] ppo\_model\_20251129\_115221

[N] Train new model

## PPO Evaluation Report

### **COSTS**

Avg Daily Cost: \$265.89 (+/-5.03)

Holding Cost: \$24548.85

Stockout Cost: \$24900.26

Ordering Cost: \$47601.46

### **SERVICE LEVEL**

Fill Rate: 88.0%

Stockout Rate: 20.5%

### **INVENTORY**

Avg Inventory: 67.3 units

### **PERFORMANCE**

Total Reward: -97050.57

Found 2 saved model(s):

[1] 20251125\_000337

[2] sac\_inventory

[N] Train new model

## SAC Evaluation Report

### **COSTS**

Avg Daily Cost: \$286.87 (+/-6.95)

Holding Cost: \$23851.66  
Stockout Cost: \$24541.00  
Ordering Cost: \$56315.89

#### **SERVICE LEVEL**

Fill Rate: 88.2%  
Stockout Rate: 22.6%

#### **INVENTORY**

Avg Inventory: 65.3 units

#### **PERFORMANCE**

Total Reward: -104708.56  
Found 1 saved model(s):  
[1] 20251125\_011757  
[N] Train new model

## **Dyna-Q Evaluation Report**

#### **COSTS**

Avg Daily Cost: \$331.36 (+/-14.21)  
Holding Cost: \$40597.10  
Stockout Cost: \$33717.00  
Ordering Cost: \$46632.00

#### **SERVICE LEVEL**

Fill Rate: 83.8%  
Stockout Rate: 22.2%

#### **INVENTORY**

Avg Inventory: 111.2 units

#### **PERFORMANCE**

Total Reward: -120946.10  
DOUBLEDQN  
Found 1 saved model(s):  
[1] 20251125\_012040  
[N] Train new model

## **Double DQN Evaluation Report**

#### **COSTS**

Avg Daily Cost: \$306.54 (+/-5.17)  
Holding Cost: \$35812.30  
Stockout Cost: \$20981.00  
Ordering Cost: \$55094.00

#### **SERVICE LEVEL**

Fill Rate: 90.0%  
Stockout Rate: 15.7%

#### **INVENTORY**

Avg Inventory: 98.1 units

#### **PERFORMANCE**

Total Reward: -111887.30

## Summary Comparison

Algorithm	Avg Cost	Fill Rate	Stockout Rate	Avg Inventory	Total Reward
PPO	\$265.89	87.96%	20.49%	67.3	-97050.57
SAC	\$286.87	88.22%	22.58%	65.3	-104708.56
Double DQN	\$306.54	89.97%	15.70%	98.1	-111887.30
Dyna-Q	\$331.36	83.84%	22.19%	111.2	-120946.10
Q-Learning	\$509.69	22.25%	94.11%	1.4	-186035.20